DIRECT TESTIMONY OF

DAVID A. LAVIGNE

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2012-203-E

Q. PLEASE STATE YOUR FULL NAME AND BUSINESS ADDRESS.

A. My name is David Lavigne. My business address is 1162 State Highway 213, Jenkinsville, South Carolina.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed as General Manager, Operational Readiness for New Nuclear Deployment ("NND"), for South Carolina Electric & Gas Company ("SCE&G" or the "Company").

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I have a Bachelor of Science Degree in Management from the University of South Carolina and possess a Senior Reactor Operator Certification. I joined SCE&G in January 1977 as a quality specialist for V.C. Summer Unit 1 after serving six years in the Navy Nuclear Power Program, including an assignment as a nuclear submarine operator. While at the Company, I have held positions of Quality Assurance Specialist; Associate Manager, Quality Assurance; Manager Nuclear Quality Control; Manager, Materials and Procurement; General Manager,

Nuclear Safety; and General Manager, Nuclear Support Services. In 2002, I was named General Manager, Organizational Effectiveness and served in that role for 9 years. My duties during that time included Organizational Development and Performance ("OD&P"), Quality Systems, Security, and Document Control. In 2010, I was transferred to my current position as General Manager, Operational Readiness in connection with the construction and operation of two Westinghouse AP1000 nuclear generating units in Jenkinsville, South Carolina (the "Units").

Q. PLEASE DESCRIBE EXHIBIT NO. __ (DAL-1).

A. Exhibit No. __ (DAL-1) describes the structure of the NND Teams that I will be discussing.

Q. WHAT ARE YOUR DUTIES WITH SCE&G?

A. As General Manager of Operational Readiness for New Nuclear Deployment, I am responsible for all staffing and support functions associated with SCE&G's readiness to operate Units 2 and 3 safely, reliably and efficiently once completed. The staff that we are assembling to carry out the permanent operations of the Units will also take primary responsibility for the maintenance and startup testing of the Units as systems are completed and turned over to SCE&G.

Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION IN THE PAST?

A. Yes. I have testified before the Public Service Commission of South Carolina (the "Commission") in a past fuel clause proceeding.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to present the current staffing plans for the Operational Readiness, Nuclear Security and Construction Oversight and Quality Assurance/Quality Control ("QA/QC") functions of NND associated with the construction and eventual operation of Units 2 and 3. Specifically, I discuss the process by which the current staffing plans were created and their impact on Owners cost. Chart A shows in detail the current staffing plan of the project as compared to the plan that appeared in Docket No. 2010-376-E.

Q. COULD YOU DESCRIBE WHERE YOU STARTED IN REVIEWING THE STAFFING PLANS?

A. As the Commission is aware from prior proceedings, in the period 2008-2010, SCE&G intensively reviewed the initial staffing, hiring and training plans for the project. The initial versions of these plans had been compiled prior to the signing of the EPC Contract, based on the information available at the time, including benchmark information that was gathered from the Electric Utility Cost Group ("EUCG"), the Nuclear Energy Institute ("NEI"), the Electric Power Research Institute ("EPRI"), Westinghouse and the Institute of Nuclear Power Operations ("INPO").

In our initial review of these plans, the Operational Readiness group sought to ensure that a full complement of thoroughly-trained personnel would be in place to operate the Units prior to fuel load and to accept the security, testing and

maintenance responsibility for major systems as turnovers occur throughout the construction process. We also sought to ensure that the plan included the personnel necessary to oversee construction, engineering, QA/QC, licensing and project financial and commercial issues during the construction project.

Q. WHAT ACTION DID YOU TAKE WITH THESE PLANS?

A. The staffing plans that resulted from this review were presented to the Commission in Docket No. 2010-376-E and were approved.

Q. PLEASE DESCRIBE THE PROCESS BY WHICH YOU HAVE UPDATED THE PLANS PRESENTED IN DOCKET NO. 2010-376-E.

A. Since 2011, we have continued to review our staffing plans as new information has emerged concerning the design of the plant, regulatory requirements such as those forthcoming from the Fukushima event, physical security requirements for the plant, challenges concerning retaining and licensing operating personnel, and similar matters. During this period, we conducted extensive interviews with the leadership of each department of the current operating unit, Unit 1, and with each department involved in the construction and operational readiness of the new Units. During the latter part of 2011, a group of experienced personnel with diverse backgrounds in nuclear operations, safety, security, plant operations and maintenance, engineering, quality systems, training, construction, planning and scheduling, outage, OD&P, licensing, chemistry, documents and records, materials and procurement, health physics, and emergency planning was assembled as "challenge" boards. The role of the challenge boards

was to review and validate the assumptions for the staffing levels presented by each area of NND Operational Readiness. The challenge boards recommended adjustments up and down in staffing levels. But on the whole, their conclusion was that the plan presented did not provide for the hiring and training of sufficient personnel for SCE&G to conclude that projected staffing and training levels would be sufficient to startup and operate the Units reliably and effectively.

Q. WHAT DID YOU DO WITH THIS INFORMATION?

A. As a result of the input from these challenge boards, adjustments to staffing levels were made and presented to SCE&G's nuclear leadership team for review. Concurrently, the Construction Oversight and QA/QC group within NND conducted an internal review of staffing requirements for the Construction Oversight and QA/QC functions in support of the construction project. They conducted this review in light of the four years of experience they had gained with the level of staffing that was actually required for SCE&G to fulfill its role as owner in this project, and the high level of oversight and accountability that the NRC expected of SCE&G in this role. At the completion of their work, they presented their conclusions to SCE&G's nuclear leadership team for review.

Q. WHAT WAS THE RESULT OF THESE REVIEWS AND ADJUSTMENTS?

A. This analysis and review has resulted in the addition of 95 Full Time Equivalents ("FTEs") in Operational Readiness, and 20 additional FTEs for the

nuclear security contractors. The associated cost is $60.6 million.[1] The analysis and review of the Construction Oversight, QA/QC, and other project support functions has resulted in the addition of 29 FTEs to the staffing plan, or $11.7 million to Owners cost.

The total staffing-related adjustment being presented here is $72.3 million, which represents the addition of 144 FTEs to the staffing plan. These figures are presented in Chart A below.

[1] Unless otherwise specified, all cost figures in this testimony are stated in 2007 dollars net of Allowance for Funds Used During Construction and reflect SCE&G's share of the cost of the Units.

Chart A

	Full Time Equivalents (FTE)		
	New Nuclear & Operational Readiness Labor Variance		
	Order 2011-345 PSC Approved Budget	Proposed Staffing Plan	Delta
Group	Full Time Equivalents Units 2 & 3	Full Time Equivalents Units 2 & 3	Increase to Owner's Plan
Management Admin	2	2	**0**
Operations	141	167	**26**
Maintenance	144	128	**-16**
Planning & Scheduling	26	36	**10**
Outage	3	7	**4**
Business & Financial	29	22	**-7**
Engineering	85	107	**22**
Licensing	15	16	**1**
Emergency Services	4	27	**23**
Health Physics	44	61	**17**
Chemistry	26	31	**5**
Training	54	58	**4**
Security (SCE&G only)	22	25	**3**
Quality Systems	7	27	**20**
OD&P	11	16	**5**
Recs, Docs, & Repro	4	10	**6**
Construction	19	20	**1**
Total	636	760	**124**

Security Contractors			**20**

Total	144

Q. COULD YOU PLEASE PROVIDE A BREAKDOWN OF THE FUNCTIONS THAT IMPACTED THE STAFFING ANALYSIS?

A. The staffing categories contained in Chart A reflect departments and not functions. There are several functional areas that cut across these staffing categories. On a functional basis, these areas consist of Emergency Planning/Health Physics, Operator/Training Margin, APOG/Programs/Procedures, Timing Variance to Support Craft and Technical Training Program, Nuclear Construction Oversight and QA/QC, Other, and Security Contractors.

CHART B

Changes by Functional Cause

Cause	FTE Change	Cost Change (millions)
Emergency Planning/Health Physics (Fukushima)	40	$5.9
Operator/Training Margin	30	$17.4
APOG / Programs / Procedures	22	$15.7
Timing Variance to Support Craft and Technical Training Program	3	$15.5
Nuclear Construction Oversight and QA/QC	26	$8.6
Other	3	$3.1
Total SCE&G	**124**	**$66.2**
Security Contractors	20	$6.1
TOTAL	**144**	**$72.3**

Q. COULD YOU PLEASE EXPLAIN THE IMPACT OF THE EMERGENCY PLANNING/HEALTH PHYSICS CATEGORY ON THE STAFFING ANALYSIS?

A. Much of the change in this emergency response/health physics category is the result of emerging regulatory limits on the responsibilities that can be assigned to emergency response personnel. In the past, emergency response personnel at operating nuclear units have been assigned additional duties with the understanding that these additional duties would not interfere with their core duties in case of an emergency. In response to the events at Fukushima, the NRC determined that many of these additional duties may interfere with emergency response functions in a prolonged and wide-spread emergency event. As a result, the NRC began rulemaking proceedings to limit the number of collateral duties that may be assigned to emergency personnel during a multi-unit response. These formal rulemaking proceedings are not yet complete and will continue to require further analysis. The NRC published guidance in this area in November 2011 and the Nuclear Energy Institute has drafted an implementing document setting forth how the nuclear industry will meet the announced requirements of the NRC rulemaking.

It is the practice in our industry to meet emerging safety and reliability issues proactively rather than waiting for regulatory mandates. So based on the information emerging in this area, SCE&G has evaluated the impact on the staffing plan for the Units of limiting emergency personnel's collateral duties.

Limiting those duties results in an additional 40 FTEs being added to the staffing plan. The cost associated with some of these FTEs will be shared with Unit 1, and the Unit 1 share of their cost is not reflected in this filing. The result is an increase of $5.9 million in forecast of Owners cost for the new Units. This is the amount identified to date, based on the initial guidance given in the tier 1 Fukushima regulations. This rulemaking process could result in additional requirements.

Q. PLEASE DESCRIBE THE IMPACT OF OPERATOR AND TRAINING MARGINS ON THE STAFFING ANALYSIS.

A. A key responsibility of the Operational Readiness team is to ensure that before initial fuel load SCE&G has hired, trained and licensed a sufficient number of nuclear reactor operators to operate each of the Units safely and reliably 24 hours a day seven days a week. Our staffing plan must ensure that there are enough operators available to account for the time required for vacations, in-service training, recertification and re-licensure, sick leave, family leave and other times when individual operators will be unavailable for duty in the control room. The training process for licensing nuclear reactor operators is demanding and takes approximately 3-7 years to complete based on previous incumbent experience.

One of the challenges in preparing a staffing plan for a start-up unit is anticipating how many candidates must be hired at the start of the process to ensure an adequate number of licensed operators are on hand when the Units go into service. Over the past year, SCE&G has revised its staffing plans for nuclear

reactor operators to take into account the likelihood that attrition during training will be higher than initially forecasted and that more candidates than originally anticipated will fail to complete the training and licensing program successfully.

Q. WHY DO YOU BELIEVE THAT ATTRITION AND FAILURE RATES MAY BE HIGHER THAN ANTICIPATED?

A. This conclusion is based in part on SCE&G's experience over the past four years in recruiting qualified applicants for its reactor operator positions at Unit 1 and at the new Units. The nuclear power industry has entered a period in which a large number of qualified operators are reaching retirement age. Given the nature of today's military, fewer candidates with reactor operator qualifications and experience are available for hire. As a result, SCE&G has found that the competition for qualified candidates is greater than it has been in the past, and we see candidates with less direct experience in reactor operations than in the past. As a result, the likelihood of trainees being hired away by other utilities, or simply deciding that this career is not for them, is greater than in the past. In addition, industry experience has demonstrated a higher degree of difficulty in passing the NRC licensing program for new licensees. This fact was highlighted recently when another utility experienced a higher than expected failure rate for a pool of candidates on the initial licensed operator exam. In sum, we must train less experienced candidates with less practical exposure to the work to meet higher licensing standards while facing greater competition to retain them.

Q. HOW HAS SCE&G RESPONDED TO THESE CONCERNS?

A. To ensure that there is a sufficient pool of operators to operate the Units prior to initial fuel load, SCE&G has increased its estimates of the attrition and failure rates among its reactor operator candidates. SCE&G has increased the number of candidates that it will hire and train to support plant start-up.

Q. WHAT IS THE RESULT OF THIS CHANGE IN THE STAFFING PLAN?

A. This change in the staffing plan results in 30 additional FTEs being added to the staffing plans for the Units representing $17.4 million of the adjustment in forecasted costs.

Q. HOW DO CHANGES IN THE DEVELOPMENT OF PROGRAMS AND PROCEDURES AND THE EFFECTIVENESS OF APOG AFFECT OWNERS COST?

A. As the Commission is aware, the Company is a member of APOG, a group of five utilities who have each submitted applications to the NRC to license AP1000 units. Among its other functions, APOG supports the efforts of the owners of AP1000 units to develop and document approximately 100 plant programs (such as the Thermal Performance Program, the Equipment Reliability Program, and the System Status Control Program) and approximately 4,200 individual procedures that will be required to operate and maintain the Units. Those programs and procedures must be in place before initial fuel load for the new Units can take place.

Q. HOW HAS APOG'S ROLE IN THE PROJECT CHANGED?

A. Prior staffing plans for the Units were based on the understanding that SCE&G would be one of five APOG utilities sharing the burden of drafting the required programs and procedures. However, personnel working on these tasks must have on-going access to detailed information concerning the design and technology contained in the Units and their operating parameters. This is information which the EPC Contract protects as confidential. Only two of the five AP1000 license applicants, SCE&G and the Southern Company, currently have active EPC contracts with Westinghouse/Shaw and so have access to this information. In 2011, Westinghouse/Shaw determined that those utilities which do not have active EPC contracts cannot have access to the proprietary information that is required to participate in this work. As a result, only SCE&G and Southern Company can currently collaborate in developing this large body of programs and procedures.

Q. HOW HAS THIS AFFECTED YOUR STAFFING PLANS?

A. This decision initiated a comprehensive assessment of the overall approach used to support engineering programs prior to and after initial fuel load. To manage the expanded role of the Company in these efforts, and the accompanying reduction in information and resources available to the Company through APOG, SCE&G is accelerating the hiring of engineers to develop these programs and procedures. Additionally, the overall engineering staff size was increased to assure continued program support and maintenance into the operational phase of the

Units. The result of these actions is an increase to Owners cost of 22 FTEs at a cost of $15.7 million.

Q. PLEASE EXPLAIN HOW SCE&G'S PLANS RELATED TO CRAFT AND TECHNICAL TRAINING PROGRAMS HAVE CHANGED.

A. As indicated above, SCE&G has increased its hiring of reactor operator candidates in part because the standards for the required training and testing have become more stringent in recent years. The craft and technical employees that will operate the Units must also be trained in accordance with the INPO accredited training programs, which are designed to meet or exceed all NRC requirements. SCE&G has revised the time and costs associated with its training plans for candidates for craft and technical positions. These positions are in the areas of chemistry, maintenance, outage and planning, and scheduling. This required training also requires us to hire these positions earlier. We have further accelerated the training and hiring schedules so that candidates can complete their training and qualification earlier, so that they will have more time to get hands-on practical experience with nuclear operations before initial fuel load for the Units.

Q. PLEASE EXPLAIN WHY THIS IS IMPORTANT.

A. While training itself is critically important, we also believe that it is important that the craft and technical staffs for the Units get as much hands-on experience as possible before the Units go into operation. By accelerating the training schedule, we make it possible for these craft and technical employees to have the opportunity to work with the start-up and testing teams for the Units and

to work alongside their colleagues on Unit 1 who have similar responsibilities. This will allow new hires to gain greater hands-on experience in their new functions before commercial operations begin.

Q. WHAT IS THE IMPACT ON STAFFING AND COST FORECASTS?

A. The early hiring of craft and technical employees and the addition of 3 FTEs have resulted in anticipated cost increases to Owners cost of approximately $15.5 million.

Q. PLEASE EXPLAIN THE STAFFING CHANGES REQUIRED IN THE CATEGORY OF NUCLEAR CONSTRUCTION OVERSIGHT AND QA/QC.

A. Experience overseeing the construction of the Units to date has led the Company to conclude that additional oversight personnel are necessary to effectively oversee the project and ensure compliance with NRC QA/QC requirements, adherence to the terms of the EPC Contract, and the ultimate success of the construction program. This was discussed in detail in the testimony of Mr. Byrne. When the original staffing estimates were made, we assumed that SCE&G's role would be less "front line" and more focused on oversight of Westinghouse/Shaw's QA/QC programs as inspected and audited by the NRC. Experience has shown us that while our contractors' QA/QC programs are meeting regulatory requirements, there is no substitute for the accountability provided by an owner's direct involvement and insistence on quality and timely work. The NRC concurs in this, and has made it very clear that they hold SCE&G

ultimately accountable as owner/licensee for the quality, reliability and safety of the Units as constructed. They expect SCE&G to be actively and directly involved in overseeing all aspects of the work and we agree. The value of additional personnel to oversee the construction effort and the world-wide procurement chain for this project cannot be overstated. For this reason, SCE&G has added 26 FTE hires totaling approximately $8.6 million to provide for this critical role.

Q. PLEASE EXPLAIN THE "OTHER" CATEGORY AND HOW CHANGES TO THOSE ITEMS IMPACT STAFFING AND OWNERS COST.

A. The transfer of documentation from Westinghouse/Shaw to SCE&G is a process that needs to start earlier than previously anticipated to assure all relevant information is captured in the SCE&G records system for current and future use. Additionally, lessons learned from fitness for duty and access control violations at other utility's facilities warranted increased focus on these areas as well. Security personnel were also added to assure positive control of nuclear safeguards information during the construction phase of the project. Finally, other staffing evaluations resulted in staff decreases in areas like business and finance. The analysis shows an increase of 3 FTEs in this category totaling approximately $3.1 million.

Q. PLEASE EXPLAIN THE SECURITY CONTRACTOR CATEGORY AND HOW CHANGES TO IT IMPACT STAFFING AND OWNERS COST.

A. One of the key responsibilities SCE&G has as holder of the NRC licenses for the Units is to ensure the physical security of the site. As is typical in the

industry, SCE&G maintains a core group of internal security personnel, but principally relies on contractors for this function.

The security staff for a nuclear unit is based on threat response planning that takes into account the layout and configuration of the Units and their supporting buildings, access points and site topography. These plans are very specific and detailed documents can only be completed as the site layout is finalized including all ancillary buildings. In addition, these threat response plans must conform to current guidance from the NRC and the industry and the nature and severity of the threats that can be anticipated.

Based on changes to the site layout as a result of finalizing engineering plans for things like employee access points and the location of ancillary buildings, and based on current guidance as to threats to be taken into account, SCE&G has revised its staffing plans for security to add 20 additional FTEs in this area at a cost of approximately $6.1 million.

Q. HOW DID YOU ASCERTAIN THE REASONABLENESS OF THE ADDITIONAL COSTS PROPOSED HERE?

A. I have personally reviewed the budget forecasts presented here to ensure that the costs they include are reasonable and necessary. We are very sensitive to the need to control costs on this project. SCE&G management has been unrelenting in its review of the reasonableness of this plan and its insistence that the entire project team remain fully committed both to controlling costs and to ensuring the success of the project. Each team within NND and NND leadership

has been required to justify the necessity of each position and the timing of each hiring date. Based on my 38 years of experience in the nuclear industry, and my involvement in these reviews, it is my opinion that these costs are reasonable and prudent and reflect a strong commitment to control costs where possible without unreasonably putting the success of the project at risk.

CONCLUSION

Q. WHAT ARE YOU REQUESTING THIS COMMISSION TO DO?

A. The Company is requesting that the Commission approve, pursuant to S.C. Code Ann. § 58-33-270(E), the updated capital costs schedule in Exhibit No. ___ (CLW-1) as the approved schedule of capital costs for the Units.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

STRUCTURE AND RESPONSIBILITIES OF THE NND TEAMS

Organizational Reporting Structure of the NND Teams

The NND Teams are comprised of three separate organizations: 1) NND which reports to SCE&G's Vice President of New Nuclear Deployment; 2) NND Operational Readiness and NND Training which reports to SCE&G's Senior Vice President and Chief Nuclear Officer; and 3) NND Finance which reports to SCANA's Vice President for Nuclear Finance. Collectively these organizations constitute the NND Team.

Areas of Responsibility of the NND Team.

1. There are six functional groups within NND that report to the Vice President of New Nuclear Deployment. They include:

a) NND Nuclear Licensing – The NND Nuclear Licensing group had 14 employees as of July 2012. This group is responsible for overseeing all aspects of the NRC licensing and non-NRC permits and authorizations that are required for the construction and start-up of the Units. This group also serves as the primary interface with all external regulatory authorities interfacing with new nuclear units.

b) NND Design Engineering – NND Design Engineering was comprised of 17 employees as of July 2012. This group is responsible for reviewing and overseeing all aspects of the design of the Units by Westinghouse and Shaw with specific emphasis on site specific aspects of the design and construction designs which are being finalized and updated as construction proceeds.

c) NND Quality Systems – NND Quality Systems was comprised of 9 employees as of July 2012. This group is responsible for ensuring that the Units are being designed and constructed in compliance with all applicable NRC regulatory requirements and procedures. This group oversees quality assurance and quality control for on-site construction and assembly activities as well as for equipment fabrication at suppliers' locations worldwide.

d) NND Organizational Development and Performance (OD&P)- This group was comprised of 5 personnel as of July 2012 and oversees the Westinghouse and Shaw groups corrective action, human performance and

safety culture programs. In addition, this group also oversees the implementation of these programs within the NND Teams.

e) NND Construction – NND Construction was comprised of 21 employees as of July 2012 and is responsible for the overall management of the construction project on site, including the effective implementation of the EPC Contract, the oversight of construction activities and the coordination of contractor activities. This group ensures compliance with the project schedule by Westinghouse/Shaw, as well as compliance with all required permits and regulatory requirements.

f) NND Business and Finance – The NND Business and Finance organization was comprised of 4 employees as of July 2012. This group is responsible for overseeing the administration of the EPC Contract to ensure the Company gets the benefit of the business and financial protections it contains. It supports the invoice review process, and oversees the communication with ORS and resolution of concerns with ORS concerning the progress of the project, BLRA milestone completions, and related matters. SCE&G's NND Business and Finance Team and SCANA's NND Finance team work collaboratively on all matters.

2 The two areas of the NND Team that report to SCE&G's Senior Vice President and Chief Nuclear Officer are:

a) NND Operational Readiness – The NND Operational Readiness organization was comprised of 85 employees as of July 2012 and is responsible staffing the team that will operate and maintain the Units when complete. This group will also oversee the development of the programs, policies and procedures needed to effect an orderly transition from the construction to operations phase of the units.

b) NND Training – The NND Training team was comprised of 48 employees as of July 2012 and is responsible for the training and qualification of the operations, maintenance and technical staff supporting the new Units.

3 The NND Team that report to SCANA Vice President of Nuclear Finance:

a) NND Finance – This group was comprised of 11 employees as of July 2012 and oversees compliance with the EPC Contract, administers the EPC and Non EPC invoice review processes, NND budgeting and systematically tracks and reports the project costs. The group also processes reports for reporting to internal and external agencies.